FOURTH FIVE-YEAR REVIEW REPORT
UNIVERSAL OIL PRODUCTS SUPERFUND SITE
EAST RUTHERFORD, NEW JERSEY

Prepared by

U.S. Environmental Protection Agency
Region 2
New York, New York

September 2016

Approved by:

Walter E. Mugdan, Director
Emergency and Remedial Response Division

Date: September 27, 2016

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This is the fourth five-year review for the Universal Oil Products (UOP) Superfund site located in East Rutherford, Bergen County, New Jersey. The purpose of this five-year review is to review information to determine if the remedy is and will continue to be protective of human health and the environment. The triggering action for this statutory five-year review is the completion date of the previous five-year review, September 26, 2011.

This fourth five year review of the UOP site found that a protectiveness determination of the remedy at Operable Unit (OU1) cannot be made at this time until further information is obtained. Further information will be obtained by evaluating risks to ecological receptors and determining if exposures to soils that were not remediated need to be addressed. It is expected that these actions will take approximately two years to complete, at which time a protectiveness determination will be made. In addition, the remaining institutional controls (deed notices) need to be implemented.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Universal Oil Products		
EPA ID: NJD002005106		
Region: 2	**State:** NJ	**City/County:** East Rutherford, Bergen County

SITE STATUS	
NPL Status: Final	
Multiple OUs? Yes	**Has the site achieved construction completion?** No

REVIEW STATUS
Lead agency: EPA
Author name (Federal or State Project Manager): Douglas Tomchuk
Author affiliation: USEPA, Region 2
Review period: 9/26/2011 - 9/26/2016
Date of site inspection: 7/20/2016
Type of review: Statutory
Review number: 4
Triggering action date: 9/26/2011
Due date *(five years after triggering action date)*: 9/26/2016

Issues/Recommendations				
Issues and Recommendations Identified in the Five-Year Review:				
OU(s): OU1	**Issue Category: Remedy Performance**			
	Issue: Ecological risk evaluation was insufficient			
	Recommendation: Evaluate ecological risks to residual soil contamination and determine if additional actions need to be taken			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	10/31/2018

OU(s): OU1	**Issue Category: Institutional Controls**

	Issue: Deed Restrictions for areas east of NJ Transit Pascack Valley Line			
	Recommendation: Implement deed restrictions called for in ROD			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	10/31/2017
OU(s): OU1	**Issue Category: Monitoring**			
	Issue: Presence of vapor barrier has not been verified			
	Recommendation: Obtain additional information on whether a vapor barrier is present below strip mall buildings in Area 2, or data to show that vapor intrusion is not a problem.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	10/31/2018

Protectiveness Statement(s)

Operable Unit:	*Protectiveness Determination:*
OU1	Protectiveness Deferred

Protectiveness Statement:

A protectiveness determination of the remedy at OU1 cannot be made at this time until further information is obtained. Further information will be obtained by evaluating risks to ecological receptors and determining if additional actions need to be taken to address exposure. It is expected that these actions will take approximately two years to complete, at which time a protectiveness determination will be made.

Introduction

The purpose of a five-year review is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment and is functioning as intended by the decision documents. The methods, findings, and conclusions of reviews are documented in the five-year review. In addition, five-year review reports identify issues found during the review, if any, and document recommendations to address them.

This is the fourth five-year review for the Universal Oil Products (UOP) site, located in East Rutherford, Bergen County, New Jersey. This five-year review was conducted by the Environmental Protection Agency (EPA) Remedial Project Manager (RPM) Douglas Tomchuk. The review was conducted pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C. §9601 *et seq.* and 40 CFR 300.430(f)(4)(ii), and in accordance with the *Comprehensive Five-Year Review Guidance*, OSWER Directive 9355.7-03B-P (June 2001). This report will become part of the site file.

The triggering action for this statutory review is the completion date of the previous five-year review. A five-year review is required at this site due to the fact that hazardous substances, pollutants or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

The site consists of 2 operable units,[1] one of which is addressed in this five-year review. This five-year review addresses OU1 which consists of final actions for the upland portions of the UOP site, (Areas 1, 1A, 2, and 5 on Figure 1), and an interim action for shallow groundwater. Operable Unit 2 (OU2), which addresses the on-site stream channels and wetlands (referred to as the streamlands), as well as the final groundwater remedy, is still being investigated and is not included in this review.

Site Chronology

See Table 1 for the site chronology.

Background

Various chemicals were manufactured at the 75-acre UOP site, located in East Rutherford, New Jersey, from 1932 through 1979. The company also recovered solvents and waste chemicals at the site from 1960 through 1979. About 4.5 million gallons of waste solvents and solid chemical wastes were dumped into two unlined lagoons during this time, which resulted in contamination of soils, surface water and groundwater.

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[1] Previous documents have separated the lagoon and the streamlands into OU2 and OU3, respectively. However at this time, those areas are being investigated together and will be addressed in one decision document.

A remedial investigation/feasibility study (RI/FS) completed in the early 1990s found that soils at the site were contaminated with polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), VOCs and lead, and that the groundwater at the site was contaminated with volatile organic compounds (VOCs).

The remedial action for the UOP OU1 was selected in a 1993 Record of Decision (ROD) and a 1998 ROD Amendment. It was modified by an April 1999 Explanation of Significant Differences (ESD). Construction began in March 1996 and most of the physical construction work was completed by 1999. There are two Remedial Action Reports for OU1; one for Areas 1, 1A and 5, including the shallow groundwater interim remedial action, and another for Area 2. The Area 2 Remedial Action Report - Addendum was submitted in July 2006 to describe remedial activities associated with the redevelopment that occurred in Area 2. A Supplemental-Addendum to the Remedial Action Report for Area 2 was submitted in August 2008 to address some of EPA's concerns with respect to the potential for vapor intrusion.

In 2007, an interim remedial measure (IRM) was conducted in accordance with New Jersey site remediation guidelines along the proposed path of a commuter rail right-of-way through the site because, after completion of the rail line, soils and sediments in that right-of-way would no longer be accessible. This interim action consisted of excavation and off-site disposal of contaminated soil and sediment under areas where the railroad tracks would be supported by pilings, and burial of contamination under clean soil (effectively capping) in areas where the railroad track would be elevated on soil embankments. The rail line has now been installed across the site.

New Jersey Department of Environmental Protection (NJDEP) was the lead agency for the site from 1982 to 2008. In July 2008, EPA assumed the role of lead agency. In September 2010, EPA and Honeywell, a potentially responsible party (PRP) for the site, entered into a Settlement Agreement to complete the Remedial Investigation/Feasibility Study (RI/FS) activities for OU2 and to perform an Engineering Evaluation/Cost Analysis (EE/CA) for a Non-Time-Critical Removal Action (NTCRA) for the berms of the lagoon and the surrounding area. The NTCRA was conducted in 2012. A draft RI Report was submitted for OU2 in 2011 and a draft Supplemental RI Report was submitted in July 2016. The RI Reports are currently under review.

The OU1interim remedy is fully implemented and the site is being returned to productive use; a portion of the site was redeveloped for commercial use.

Physical Characteristics

The UOP Superfund Site consists of an approximately 75-acre site located in the Borough of East Rutherford, Bergen County, New Jersey (Figure 1). The site, once a chemical facility, is in an urban/industrial area, and a portion of the site is within the Hackensack Meadowlands District, which is administered in part by the New Jersey Meadowlands Commission. The site was divided into 6 areas (Areas 1, 1A, 2, 3, 4 and 5). Area 2 has been redeveloped, including a home center (Lowes), a restaurant and a strip mall.

Berry's Creek, a tidal tributary of the Hackensack River, is located along the eastern border of the UOP Site. An RI/FS for the Berry's Creek Study Area (BCSA) is ongoing. BCSA sediments are contaminated with mercury, PCBs and other chemicals. Fish and crabs in Berry's Creek and adjacent water bodies have been found to be contaminated with chemicals at levels that exceed acceptable risk values for human consumption. NJDEP consumption advisories are in place for several species of fish and for crabs. In June 2016 it was determined that the UOP wetlands east of Murray Hill Parkway (which were previously being evaluated as part of the UOP site) will be evaluated for remediation as part of the BCSA.

Site Geology/Hydrogeology

Hydrologic conditions at the site are complex, particularly the tidal interactions among the site groundwater and nearby Berry's Creek. The site is mostly flat with elevations of four to nine feet above mean sea level for the upland areas of the site, Areas 1, 1A, 2, and 5 (see, Figure 1). The site is regularly subjected to tidal flooding and is partly covered by a tidal salt marsh and a system of natural and artificial surface water channels. The main channel on the site is referred to as Ackerman's Creek, which drains into Berry's Creek. Many flora and fauna are found in the vicinity of the site. Upland portions have been built up to current grade with miscellaneous fill material.

Groundwater at the site exists in two units. The upper unit consists of a layer of fill on top of an organic layer called meadow mat. This unit is isolated horizontally by the on-site surface waters and is generally brackish. In 1996, in response to a petition by the PRP, New Jersey designated this shallow aquifer at the site as Class III-B, non-potable and hydraulically connected to a saline water body. A deeper aquifer is separated from the shallow aquifer by approximately 100 feet of varved clay. The vertical hydraulic gradient in the area tends to be upward, and along with the lack of dense non-aqueous phase liquid, leads to the conclusion that the site has not affected the deeper aquifer.

Land and Resource Use

The UOP property is surrounded by undeveloped tidal marshes, highways, and commercial and light industrial properties. The closest residential area is approximately one-half mile to the west. The site is zoned for commercial and industrial development. Other former facilities in the immediate area, such as Becton Dickinson and Matheson Gas, had drainage systems that ultimately discharged to Ackerman's Creek, (i.e., these facilities may be upgradient sources of contamination to the site).

Area 2 has been redeveloped, including a home center (Lowes), a restaurant and a strip mall. The rest of the site, on the east side of the NJ Transit Pascack Valley Line, is fenced to restrict public access. The on-site landfill in Area 5 that was constructed as part of the remediation, has an additional fence separating it from the other portions of the site.

Area 3 was a lagoon, and is only accessible through Area 4 or along the train tracks. Area 4 is a wetland that is relatively inaccessible due to the soft muddy ground surface and phragmites, a

common wetland plant. Area 4 is on both sides of the Murray Hill Parkway and borders Berry's Creek.

The New Jersey Transit Pascack Valley Line crosses the site between Area 2 and the rest of the site. An extension of the Pascack Valley Line to the Meadowlands Sports Complex was constructed across the site. The Meadowlands rail spur extends across part of Area 4 (wetlands and waterways) crosses through the middle of the lagoon (Area 3) then crosses Areas 1A and 5 on its way to the Meadowlands Sports Complex. The other branch of the "Y" for return trains crosses Area 1. (See Figure 1)

There were no federally listed or proposed threatened or endangered species found at the site.

History of Contamination

The site was developed in 1932 and was originally used as an aroma chemical laboratory. Facilities were later expanded to handle chemical wastes and solvent recovery operations. Two waste water lagoons were used as holding areas for the facility wastewater. UOP acquired the property and facilities in 1960. Use of the waste treatment plant and waste water lagoons ceased in 1971. All operations at the facility ceased in 1979. In 1980, all site structures were demolished except for concrete slabs and a pipe bridge over the railroad tracks. During the years of operation, both the wastewater lagoons and the routine handling of raw materials and wastes resulted in the release of various hazardous substances to the soils and shallow groundwater

The groundwater on the site was found to be contaminated with various VOCs, including benzene, chlorobenzene, 1,2-dichloroethene, trichlorethene, 1,1,2,2-tetrachloroethane and toluene. The maximum concentration of total VOCs in groundwater identified during the RI/FS was 210 parts per million (210 ppm). The soil was contaminated primarily with PCBs, PAHs, VOCs and lead. Maximum concentrations found on site were: greater than 2,000 ppm PCBs, 1,474 ppm PAHs, 2,108 ppm total VOCs, and 14,100 ppm lead. Chromium and mercury have also been identified in the sediment on site, to be assessed as part of the OU2 RI/FS.

Initial Response

The Universal Oil Products site was placed on the National Priorities List (NPL) on September 8, 1983.

Investigations conducted by the PRP with State oversight, completed in May 1985, provided sufficient information for NJDEP to direct the PRP to perform a removal action for contamination at the waste lagoons (Area 3). Contaminated media in the lagoons included water, waste sludges and sediments. The removal action was conducted in 1990 by the PRP with state oversight pursuant to a May 23, 1986 Administrative Consent Order (ACO) with New Jersey. The ACO required excavation of all contaminated materials comprising the two waste lagoons, and disposal of the materials off site. The lagoons were dredged or excavated to the underlying clay and the berm between the two lagoons removed, resulting in one larger lagoon. No backfill was placed. This action was completed in August 1990.

Basis for Taking Action

In addition to the initial removal action described above, an RI/FS conducted in the early 1990s found that soils at the site were contaminated with PCBs, PAHs, VOCs and lead, and that the groundwater at the site was contaminated with VOCs. Exposure scenarios included: young people trespassing on the property, future adult workers that would be present if the site was developed, and a construction worker population that would be present for a short period of time during any construction project. Groundwater exposures were not considered for the OU1 RI/FS.

A qualitative flora and fauna survey was performed for the OU1 portion of the site during the RI. No further ecological studies were conducted as part of OU1.

Remedial Actions

Remedy Selection

OU1 includes the upland areas of the UOP site (i.e. Areas 1, 1A, 2, and 5; see Figure 1). OU1 addresses contaminated soils and groundwater in these upland areas.

The September 1993 ROD addressed the threats due to contaminated soils and contaminated leachate. The major components of the selected remedy include the following:

For PCB/PAH-contaminated soils:

- Excavation and on-site treatment by thermal desorption of approximately 6,800 cubic yards of highly contaminated soil. Contaminated soils with PCB concentrations greater than 25 ppm or PAH concentrations greater than 29 ppm must be treated to below 10 ppm PCB and below 20 ppm PAH, placed on site, and covered. Soil cover must be at least 2 feet in depth.
- Soil cover for contaminated soils with PCB concentrations less than 25 ppm (4.9 acres). All soils above remediation goals established in the ROD must be covered. Soil cover must be at least 2 feet in depth.
- Institutional controls (deed restrictions) to prevent direct contact with remaining contamination.

For VOC-contaminated soils:

- Excavation and on-site treatment by thermal desorption of approximately 7,000 cubic yards of soil with VOC concentrations above the remediation goal of 1,000 ppm total VOCs, and placement of treated soils on site.
- On-site thermal desorption will also be used to treat contaminated soils associated with storm sewers on site.

For lead-contaminated soils:

- Soil cover/impermeable cap (3.7 acres) for all soil above the remediation goal of 600

ppm of lead.
- Institutional controls (deed restrictions) to prevent direct contact with remaining contamination.

For VOC-contaminated leachate (shallow groundwater):
- Leachate collection from trenches and pits;
- On-site treatment of an estimated 5.6 million gallons of leachate exceeding remediation goals identified in the ROD; and
- Discharge of treated effluent to groundwater. The areas delineated for leachate treatment are based on delineation criteria of 10 milligrams per liter (10 mg/l) of total VOCs or 1 mg/l of individual VOCs.

The remedial action described in the ROD addressed known soil contamination, and "leachate" that serves as a source of groundwater contamination in the OU1 upland areas. As discussed above, the selected remedial alternative for OU1 was identified as an interim remedy, specifically with regard to whether the VOC-contaminated soil treatment and leachate removal were sufficient to protect the surface water quality of Ackerman's Creek and groundwater. A final decision for groundwater will be documented in the OU2 ROD.

The 1993 remedy was amended in 1998 due to inefficiencies in the operation of the thermal desorption unit to address PCB and PAH contaminated soils. This unit was also the source of odor complaints from workers at an adjoining property. In December 1998, a ROD Amendment was issued. The major components of the modified remedy are as follows:

- Approximately 6,200 tons of remaining soils with concentrations greater than the remedial action goals for PCBs and PAHs will be excavated;
- Soils with carcinogenic PAHs above the remediation goals will be disposed off-site; Soils with PCB concentrations at or above 50 ppm will be disposed of in a Toxic Substances Control Act permitted landfill;
- Soils with PCB concentrations above 2 ppm but below 50 ppm will be disposed of in a Resource Conservation and Recovery Act Subtitle D permitted landfill.

An ESD in April 1999 changed the remedy technology for VOC-contaminated soils from thermal desorption to Thermally Enhanced Vapor Extraction (TEVE).

Remedy Implementation

Remedial construction under the 1993 ROD began in 1996. As of the date of the December 1998 ROD amendment, approximately 8,200 tons of the 14,400 tons of PCB/PAH contaminated soil on the site had been treated by thermal desorption. During implementation, the PRP proposed several adjustments to the remedy, including lowering the thermal treatment goal for PCBs to less than 2 ppm, and placement of all treated materials beneath a multimedia cap. As these would provide additional protection, they were accepted by NJDEP and EPA. This information will be

reflected in the OU2 ROD, in the determination of final remedy for the OU1 portions of the site. The soil that was treated, as well as less contaminated PCB/PAH soil, was placed on site in a containment area along with lead-contaminated soil. The on-site containment area is located primarily in Area 5 of the site.

Because of the problems with the thermal desorption system, the PRP chose to investigate other treatment options for the VOC-contaminated soils. In June 1998, a pilot test was conducted on the remaining 2,000 cubic yards of VOC-contaminated soil using a TEVE system. Final soil sample results demonstrated that TEVE successfully treated the VOC-contaminated soils to the remediation goals from the ROD.

A collection system for shallow groundwater was installed in Areas 1, 1A, 2 and 5. Over 2,800 linear feet of collection trenches, along with sumps and underground piping were installed. Once extracted, the water was conveyed to the water treatment plant, where it was treated with granular activated carbon. Treated water was discharged on site. A total of approximately 7 million gallons of shallow groundwater was extracted and treated. Groundwater collection and treatment started in 1996 and was completed in December 1998.

Remedial Action Reports addressing OU1 were submitted by the PRP in November 1997 for Area 2, and in August 2000 for Areas 1, 1A and 5.

The Remedial Action Report for Area 2 documented work completed including excavation of approximately 9,300 cubic yards of PCB/PAH contaminated soil and approximately 300 cubic yards of VOC-contaminated soil; thermal treatment of approximately 4,000 cubic yards of excavated soils; placement of excavated soils above remediation goals but below thermal treatment goals within the on-site containment area covered by a multi-media cap; installation of groundwater collection trenches and collection and treatment of approximately 2 million gallons of groundwater. NJDEP and EPA found several deficiencies in the implementation of the remedial action, which the PRP was required to address. Among these were findings of high PCB levels in post-excavation soil samples along the railroad right-of-way, requiring further delineation, excavation, and off-site disposal. In September 2001, the PRP submitted a revised Remedial Action Report for Area 2 which addressed the actions it took in response to the NJDEP and EPA concerns. In November 2004, NJDEP informed the PRP that NJDEP and EPA considered the remedial activities in Area 2 to have been conducted and completed in accordance with the 1993 ROD.

According to the Remedial Action Report for Areas 1, 1A and 5, work completed includes: excavation of approximately 27,000 cubic yards of soils primarily contaminated with PCBs and PAHs, approximately 13,000 cubic yards of VOC-contaminated soil, and 15,000 cubic yards of lead-contaminated soil; thermal treatment of approximately 10,500 cubic yards of excavated soil; installation of groundwater collection trenches and collection and treatment of approximately 4.8 million gallons of groundwater; placement of excavated soils above remediation goals but below thermal treatment goals within the on-site multi-media containment area; and construction of a multi-media cap over excavated soils. The Remedial Action Report for Areas 1, 1A, and 5 was

approved on August 29, 2013.

As a result of the requirements resulting from the seep/sewer investigation, all process, sanitary and storm sewers on site were cleaned or excavated. All manholes were sealed. Sediments removed from all sewers, as well as all excavated materials, were placed within the on-site containment area. As necessary to meet remediation goals, sediments were thermally treated along with the excavated upland soils prior to placement in the containment area.

Under the remedy, the site will be kept secure and hazardous substances at the site will be contained and prevented from leaving the properties via engineering controls, including the cap. All upland site perimeters are enclosed by a security fence. Access to the site via the unfenced portion of the site perimeter is limited by the marshes and tidal channels. In addition, the containment area is enclosed by a fence to prevent unauthorized access. A monitoring program was implemented to determine the effectiveness of the remedy. NJDEP has required the establishment of deed notices for areas of the site where contamination remains. The deed notice is in place for Area 2, but not for any of the areas east of the NJ Transit Pascack Valley Line.

System Operations/Operation and Maintenance

The PRP conducts routine maintenance of the site including mowing and grubbing the capped area, and filling any areas that may show signs or erosion or damage from burrowing animals. Inspections are conducted semi-annually and include the capped area, drainage structures, and security fences and locks. There are no cleanup process operations currently ongoing.

Potential site impacts from climate change have been assessed, and the performance of the remedy is currently not at risk due to the expected effects of climate change in the region and near the site.

Specifically, during the implementation of the non-time critical removal action (NTCRA) discussed below, Superstorm Sandy flooded the site as well as much of the Meadowlands area. The site was secured prior to the storm to protect equipment and prevent contaminant migration. The storm resulted in a temporary shut-down of remedial activities. In the aftermath of the storm, it was difficult getting fuel oil deliveries to run site equipment and for transportation. With the preparation measures taken, the site weathered the storm well. There was no equipment lost and contamination was not redistributed or exposed on site.

Progress Since the Last Five-Year Review

The previous FYR of the site was completed on September 26, 2011 and determined:

The implemented remedy for OUl protects human health and the environment in the short-term by controlling the exposure pathways that could result in unacceptable risks. In addition, changes in site use since the last five-year review have been performed in such a manner that affected areas of the OUl remedy continue to be protective. In order for OUl to be protective in the long-

term, final institutional controls (deed notices) need to be implemented. It included the following recommendations:

1. Implement the institutional controls (deed restrictions) that were called for in the ROD.
2. Provide additional lines of evidence to support the finding that vapor intrusion does not cause unacceptable risk for the commercial buildings in Area 2 of the site.

With respect to the recommendations from the third five-year review, Honeywell has made progress with negotiating with the New Jersey Sports and Exhibition Authority (NJSEA), the current property owner of the areas east of the NJ Transit Pascack Valley Line, to get a deed restriction in place for that portion of the site. Since the IC is not yet in place, this issue will be identified in this FYR.

In addition, EPA and Honeywell have had several exchanges of information to resolve the questions remaining with respect to potential vapor intrusion. Honeywell provided EPA with a letter from the developer of the buildings in Area 2, stating that the buildings in Area 2 had vapor barriers similar to the one that was installed at the Lowes. In additional, Honeywell provided a screening analysis to evaluate whether vapor intrusion issues would be expected based on groundwater data.

OU2 Remedial Investigation and NTCRA

As part of the Settlement Agreement (September 2010) between EPA and Honeywell, Honeywell agreed to compete the RI/FS for the OU2 portion of the site which includes Areas 3 and 4. The OU2 RI/FS is ongoing. A draft RI Report was submitted in April 2011 which included an evaluation of groundwater discharge to surface water. The findings of that evaluation were in the 2011 UOP Uplands Groundwater Report and 2011 draft RI Report. That study found no exceedances of New Jersey surface water quality standards for VOCs.

In addition, Honeywell agreed to conduct an EE/CA for a NTCRA to address PCB, mercury and chromium contamination for the berms of the former lagoon and the surrounding area. The EE/CA was submitted in January 2012 and on July 12, 2012 an Action Memo was signed authorizing the action. Field work for the NTCRA mobilized August 2012 and was completed in March 2013.

Since completion of the NTCRA, Honeywell has conducted additional monitoring in the OU2 areas, including long-term monitoring of the effectiveness of the NTCRA, as well as monitoring to evaluate Monitored Natural Recovery in the remaining portions of OU2. In July 2016, an RI Report Addendum was submitted that included an evaluation of that data. The RI Report Addendum is currently under review.

Berry's Creek Study Area RI/FS

The UOP site is contained within the BCSA, which is a separate but related CERCLA study.

Over 120 parties, including Honeywell, are participating in the multi-year investigation on the BCSA. Data from both investigations has been shared to the extent possible. Additional coordination between the projects is expected as the field investigations near completion and the RI/FS process moves toward evaluation of alternatives. The portion of the UOP wetlands east of Murray Hill Parkway are very similar to much of the other Berry's Creek wetlands, and therefore were moved from evaluation under the UOP site, to evaluation under the BCSA.

In June 2016, EPA asked the BCSA Group to submit an Addendum to the RI/FS Work Plan to conduct the FS and implementation of remedies for the BCSA in a phased approach. This will move up the decision process for the contamination in aquatic sediments in Upper and Middle Berry's Creek which are acting as a source to the wetlands and other portions of the creek. A ROD for Berry's Creek is anticipated in early 2018. The ROD for OU2 of the UOP site will follow the decision for Berry's Creek.

Five-Year Review Process

Administrative Components

The five-year review team included Douglas Tomchuk (EPA-RPM), Michael Scorca (EPA-Hydrologist), Lora Smith (EPA-Human Health Risk Assessor), Julie McPherson (EPA-Ecological Risk Assessor) and Sophia Rini (EPA-Community Involvement Coordinator). This is a PRP-lead site.

Community Involvement

On November 19, 2015, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at 32 Superfund sites and four federal facilities in New York and New Jersey, including the Universal Oil Products site. The announcement can be found at the following web address: http://www2.epa.gov/sites/production/files/2015-11/documents/fy_16_fyr_public_website_summary.pdf.

Once the five-year review is completed, the results will be made available at the local site repository, which is at:

East Rutherford Memorial Library
143 Boiling Springs Avenue
East Rutherford, New Jersey 07073

In addition, efforts will be made to reach out to local public officials to inform them of the results.

Document Review

The documents, data and information which were reviewed in completing this five-year review are summarized in Table 3.

Data Review

During the last five years, a limited amount of new data was collected to evaluate the implementation of the OU1 remedy. Most data was collected to support an analysis of the potential for vapor intrusion in this area.

In November 2012, groundwater samples near the water table were collected for VOC analysis from temporary well points installed at seven direct-push soil boring locations west of the Pascack Valley Rail Line. The main purpose of the investigation was to evaluate the potential for vapor intrusion at two commercial buildings. Concentrations in groundwater that exceeded the screening values for vapor intrusion concerns included benzene at 52.4 ug/l, 1,4-dichlorobenzene at 23.8 ug/l, and ethylbenzene at 111ug/l. In addition, to support the VI investigation effort, during the same sampling event, soil samples were field screened with a PID and little to no VOCs were measured in the vadose (dry) zone within the 0-5 feet horizon. Somewhat elevated PID readings were observed from soils at the 6 to 7 foot depth at three borings. An attempted soil gas survey to further investigate these readings was conducted in June 2013. At that time, the water level had risen to approximately 5 feet below ground surface, therefore, dry-soil gas samples could not be collected from the targeted depth zone of 6 to 7 feet below ground surface. The two commercial buildings in the redeveloped area are slab-on-grade type construction and have a minimum of five feet of separation between the slab and the top of the water table. The company that constructed the commercial buildings on the site west of the NJ Transit Pascack Valley Line has submitted a letter saying that the buildings in the strip mall include a vapor barrier similar to the one documented for the Lowes Home Center (as-built drawing). However, EPA has determined that the letter is not sufficient in itself to document the presence of a vapor barrier and therefore additional lines of evidence will be necessary.

Site Inspection

The inspection of the site was conducted on July 20, 2016. In attendance were Douglas Tomchuk, EPA and Andy Hopton of CH2MHill (consultant to the PRP, Honeywell). The purpose of the inspection was to assess the protectiveness of the remedy. Several maintenance items for the site fencing and gates were noted, as was the lack of signage along the northern perimeter. The signage becomes more important in the future, as developers are looking at the recently remediated Matheson Gas property along the northern boundary of Area 1, for residential development (see, Figure 2).

Interviews

During the five-year review process, interviews were conducted with parties affected by the site, including the current landowners, and regulatory agencies involved in site activities or aware of the site. The purpose of the interviews was to document any perceived problems or successes

with the remedy that has been implemented to date. Interviews are summarized below.

Gwen Zervas, NJDEP, telephone, July 2016
NJDEP only had a minor concern regarding the maintenance of cover over residual contamination in the former manufacturing areas. This was examined during the site visit, and appeared to be in good condition.

Andrew Hopton, CH2MHill, on-site, July 20, 2016
During the site visit for the FYR, Mr. Hopton did not have any specific issues on behalf of the PRP for the site, but clarified their efforts to resolve any concerns remaining about vapor intrusion and institutional controls. There was some discussion of fence maintenance around the on-site landfill. In addition, there was discussion about providing additional signage along the northern fence line.

Rich Galloway, Honeywell, telephone, August 8, 2016
Honeywell continues to work with NJSEA to establish the institutional controls (deed restrictions) for the property as called for in the ROD. Additional signage along the property boundary with specific concern regarding the potential for residential development at the adjacent Matheson Gas property was also discussed.

John Duffy, New Jersey Sports and Exhibition Authority, telephone, August 8, 2016
NJSEA did not have specific concerns for the FYR, but continues to work with Honeywell to resolve the final issues regarding the deed restrictions. NJSEA also has concerns regarding increased potential for trespassing on the UOP site if the adjacent Matheson Gas property is developed for residential use, and agreed additional signage along the northern fence line would be appropriate.

Institutional Controls Verification

Institutional controls are required for the site, and the third five-year review recommended that the institutional controls (deed restrictions) that were called for in the ROD be implemented. A deed notice for lots in the uplands area west of the NJ Transit Pascack Valley Line has been in place since June 2012 and no alterations, disturbance or improvements to the engineering controls on the parcel may be made without the consent of NJDEP. Resolution of all issues between NJSEA and Honeywell regarding the deed restrictions for the parcels on the east side of the Pascack Valley Line have not yet been completed, although discussions have been held.

Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

As a result of the 1993, ROD, 1998 ROD Amendment and 1999 ESD, the highly contaminated soils above PAH, PCB, and VOC cleanup goals (see, Table 2) were treated and placed into an on-site landfill or were sent off site for disposal. Excavated areas were backfilled with clean fill. Approximately 7 million gallons of leachate were collected and treated. VOC contamination will

be evaluated as part of OU2 RI/FS to ensure that remaining concentrations do not contaminate surface waters or deeper groundwater. A final remedy for groundwater will be selected in the OU2 ROD.

Institutional controls are in place to limit future use of the property for the portion of the site west of the Pascack Valley Line, but not for the portion on the east side which includes the containment cell. The deed restriction for the east portion remains the only outstanding action of the OU1 ROD.

Certain areas of fencing around the on-site containment area need maintenance or replacement to ensure that they remain effective. With the potential for increased site use (potentially residential) for the adjacent properties north of the site additional signage is warranted to help dissuade trespassers.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

While methodologies for estimating risk since the 1988 human health risk assessment was conducted for OU1 have changed, the process is similar to that presented in Risk Assessment Guidance for Superfund (RAGS). Media evaluated, exposure pathways and potentially exposed populations considered the current use of the operable unit as retail/commercial space. Risks may have been over- or under-estimated as a result of the different approaches. However, since soils have been treated or excavated and covered with clean fill, building foundations and/or parking lots, this pathway has been interrupted. Groundwater in the area of OU1 is not used for potable purposes and both groundwater and surface water are currently being evaluated as part of OU2.

Three potentially exposed populations were identified for OU1: young people trespassing on the property, an adult employee work force that would be present if the site was developed, and a construction worker population that would be present for a short period of time during any construction project. These populations continue to be representative of current site use. Adult workers are present in the commercial buildings, future construction remains a possibility and trespassers could serve as a surrogate for visitors to the various businesses. No new populations have been identified.

The last two five year reviews recommended that additional lines of evidence be provided to support the finding that vapor intrusion does not cause unacceptable risk for the commercial buildings in Area 2 of the site. As-built drawings for the Lowe's Home Improvement building have been provided and confirm a vapor barrier was installed. The company that constructed the commercial buildings on the site west of the NJ Transit Pascack Valley Line has submitted a letter saying that the buildings in the strip mall include a vapor barrier similar to the one documented for the Lowes Home Center. However, the letter is not sufficient to document the presence of a vapor barrier and additional lines of evidence, such as as-built drawings or groundwater data from beneath or surrounding the strip mall and restaurant should be obtained.

While much of the streamlands portion of the site is designated wetlands, buildings could potentially be constructed in the non-wetland areas of the site. Because VOCs exist in the groundwater and the site may be developed in the future, any construction there would need to be done with consideration of the potential for vapor intrusion. This requirement will be included in a final remedy for this portion of the site.

No other human health pathways have changed since the last five year review.

The contaminants identified as part of the 1993 OU1 upland soils ROD were: PCBs, carcinogenic PAHs (cPAH), VOCs, and lead. At that time, the remedial goals were developed using the New Jersey Soil Cleanup Criteria, which have since been superseded by the promulgated New Jersey Soil Remediation Standards. While some ROD cleanup goals are less conservative than current standards, they are within an order of magnitude and in most cases only a factor of two greater than current standards. Since EPA remediates carcinogens to a 10^{-6} risk level and our acceptable risk range is 10^{-6} to 10^{-4}, the updated standards remain within EPA's acceptable risk range. Finally, since contaminated soils in OU1 were treated and capped or excavated and clean fill brought in, the direct contact pathways have been interrupted. The institutional control to prohibit disturbance of the cap is required to ensure protectiveness into the future.

The ROD indicates that: "This selected remedy will reduce contamination at the UOP site to within acceptable levels," however, no remedial action objectives (RAOs) were identified in the OU1 ROD. Based on the remedy it is inferred that the purpose was to minimize or eliminate dermal contact with contaminated soils and minimize or eliminate leaching of contaminants through the soil and into underlying groundwater or to surface water.

The qualitative flora and fauna survey conducted for the OU1 portion of the UOP site is insufficient to state that the remedial action is protective to ecological receptors. Portions of the OU1 site had no remedial action, meaning that the surface soils could reflect exposure to contaminant concentrations up to the industrial/commercial cleanup levels established in the ROD. Therefore, there is the potential to have an ecological risk in these areas and further analysis is required.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No

Technical Assessment Summary

For the uplands (OU1) portion of the site, the remedy treated contaminated soil, removed contaminated soil off site or contained contaminants that remained on site in accordance with the ROD. However, this review finds that areas of the Site that were not remediated may have contaminant concentrations up to the allowable values for industrial use, which may not be protective of ecological receptors. In addition, ICs are required to be implemented at the site and

additional information is needed to ensure vapor barriers are included in all new construction at the site.

Last, since OU1 is an interim action, soil RAOs, the 2012 NTRCA, and a final remedy for groundwater will need to be included in the OU2 ROD.

Issues, Recommendations and Follow-Up Actions

Issues and Recommendations Identified in the Five-Year Review:				
OU(s): OU1	**Issue Category: Remedy Performance**			
	Issue: Potential for ecological risk not evaluated			
	Recommendation: Provide further information or analysis or take action to ensure that exposure to OU1 areas that were not remediated do not present an ecological risk			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	10/31/2018

OU(s): OU1	**Issue Category: Institutional Controls**			
	Issue: Deed Restrictions for areas east of NJ Transit Pascack Valley Line			
	Recommendation: Implement deed restrictions called for in ROD			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	10/31/2017

OU(s): OU1	**Issue Category: Monitoring**			
	Issue: Additional information to rule out potential for vapor intrusion			
	Recommendation: Obtain information on whether a vapor barrier is present below strip mall buildings in Area 2, or data to show that vapor intrusion is not a problem.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	10/31/2018

In addition to the above recommendations, it is also appropriate to place additional signage along northern perimeter fence line to discourage potential trespassers of the presence of the site.

Protectiveness Statement

Protectiveness Statement(s)	
Operable Unit:	*Protectiveness Determination:*
OU1	Protectiveness Deferred
Protectiveness Statement: A protectiveness determination of the remedy at OU1 cannot be made at this time until further information is obtained. Further information will be obtained by evaluating risks to ecological receptors and determining if additional actions need to be taken to address exposure. It is expected that these actions will take approximately two years to complete, at which time a protectiveness determination will be made.	

Next Review

The next five-year review report for the Universal Oil Products Superfund site is required five years from the completion date of this review.

Tables

Table 1
Chronology of Site Events

Event	Date
Trubeck Laboratories developed the uplands portion of the site and operated an aroma and fragrance laboratory there.	1932 to 1979
Trubeck began operating a solvent recovery facility	1955
Trubeck constructed a wastewater treatment plant	1956
Started to utilize two on-site wastewater lagoons	1959
Universal Oil Products (a division of Signal Companies) acquired the property and facilities	1963
The wastewater treatment plant and wastewater lagoons ceased operations	1971
All remaining operations at the facility were closed	1979
UOP became a division of the Signal Companies	1979
All structures, except for the concrete building slabs and the pedestrian bridge across the NJ Transit tracks, were demolished	1980
The UOP site was added to the National Priorities List (NPL)	1983
An Administrative Consent Order (ACO) was issued by NJDEP for conducting investigations at the UOP site	1983
Allied Corporation merged with Signal Companies to form AlliedSignal	1984
A second ACO was issued for completing investigations and to conduct a feasibility study	1986
EPA released the Record of Decision of OU1 which addressed uplands soils and leachate. Called for thermal desorption for highly contaminated soils and placement of those treated soils into an on-site cap. Soil cover for less contaminated soils, collection and treatment of leachate (groundwater).	1993
ROD Amendment released by EPA. Treatment option for PCB/PAH contaminated soils was changed from vapor extraction to off-site disposal	1998
Pilot studies were conducted on treating VOC-contaminated soils with	1998

Event	Date
thermally enhanced vapor extraction	
EPA issued an Explanation of Significant Differences which changed the treatment for VOC-contaminated soils from thermal desorption to thermally enhanced soil vapor extraction.	1999
AlliedSignal became Honeywell International, Inc.	1999
First five-year review issued.	Sept. 28, 2001
NJDEP approved completion of remedial activities for Area 2.	2004
Development of Area 2 initiated. Construction of home center, restaurant and strip mall. During construction, approximately 50,000 cubic yards of contaminated material were excavated and disposed of off-site or stockpiled predominantly on Area 5.	2005
Characterization of contamination under proposed Meadowlands rail alignment	Nov 2005 to Jan 2006
Soil originally from Area 2, removed for off-site disposal	2006
Second five-year review issued	Sept. 29, 2006
IRM for material underlying Meadowlands rail alignment	2007
EPA takes lead agency role	2008
Administrative Settlement Agreement and Order on Consent for completing RI/FS for OU2 and to perform NTCRA	Sept. 27, 2010
Third five-year review issued	Sept 26, 2011
Draft EE/CA submitted	January 2012
Public meeting on EE/CA	March 6, 2011
Action Memo for NTCRA	July 12, 2012
NTCRA	August 2012 to March 2013
RAR for OU1, Areas 1, 1A and 5 Approval	August 29, 2013
NTCRA completion	September 26, 2013

Table 2: **Cleanup Goals: OU1 ROD**

Table 2: Remediation Goals for Soils (all concentration in mg/kg) From the OU1 ROD	
Contaminant	Cleanup Goal
Soil	(mg/kg)
Benzo(b)fluoranthene	4
Benz(a)anthracene	4
Benzo(a)pyrene	0.66
Benzo(k)fluoranthene	4
Chrysene	40
Dibenz(ah)anthracene	0.66
Indeno(1,2,3-cd)pyrene	4
PCBs	2
Lead	600
VOCs	1000
1,1,2,2-Tetrachloroethane	21*

*The current New Jersey Soil Cleanup Criteria for 1,1,2,2-TCA include 70 mg/kg for nonresidential direct contact and 1 mg/kg for impact to groundwater. Please see the response to Question B for additional information.

Table 3: Documents, Data and Information Reviewed in Completing the Five-Year Review

Document Title, Author	Submittal Date
Record of Decision	September 1993
ROD Amendment	December 1998
Explanation of Significant Differences	April 1999
Addendum to the Remedial Action Report for Area 2	July 2006
Amended Remedial Action Report for Area 2	July 2001
Remedial Action Report for Areas 1, 1A and 5	August 2001
Final Interim Remedial Measure Action Report	June 2008
Quarterly Reports/Semi Annual Reports	
Second Five-Year Review Report	September 2006
draft Supplement-Addendum to the Remedial Action Report for Area 2	August 2008
draft Uplands Groundwater Report	March 2011
draft Remedial Investigation Report for Operable Unit 2	April 2011
draft Engineering Evaluation/Cost Assessment	April 2011
Vapor Intrusion Investigation Results, Tech Memo	August 2013
Draft Remedial Investigation Report Addendum (OU2)	July 2016

Figures

Figure 1

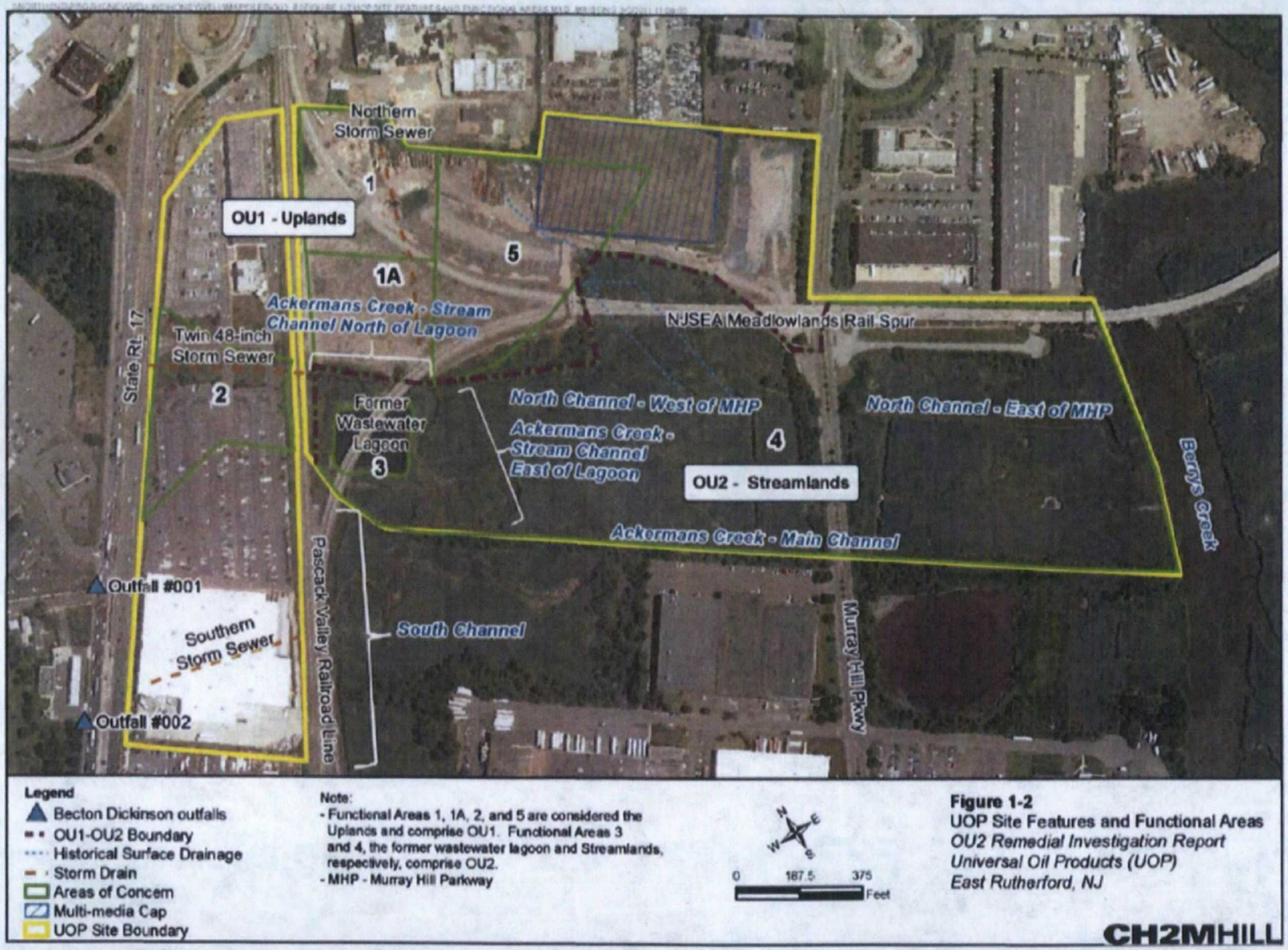

FIGURE 1


Matheson Gas Products
Meadowlands Plating & Finishing
OU1 - Uplands
Strip Mall
Chili's
State Rt. 17
NJSEA Meadowlands Rail Spur
OU2 - Streamlands
Berrys Creek
Lowes
Passaic Valley Railroad Line
Murray Hill Pkwy
Legend
OU1-OU2 Boundary
UOP Site Boundary
0
187.5
375
Feet
Figure 1
UOP Site Features
Vapor Intrusion Evaluation
Universal Oil Products (UOP)
East Rutherford, NJ
CH2MHILL

Figure 2